

SVKM's
D. J. Sanghvi College of Engineering

Program: B.Tech in Biomedical Engineering

Academic Year: 2022

Duration: 3 hours

Date: 09.01.2023

Time: 10:30 am to 01:30 pm

Subject: Nuclear Medicine (Semester VII)

Marks: 75

Instructions: Candidates should read carefully the instructions printed on the question paper and on the cover page of the Answer Book, which is provided for their use.

- (1) This question paper contains two pages.**
- (2) All Questions are Compulsory.**
- (3) All questions carry equal marks.**
- (4) Answer to each new question is to be started on a fresh page.**
- (5) Figures in the brackets on the right indicate full marks.**
- (6) Assume suitable data wherever required, but justify it.**
- (7) Draw the neat labelled diagrams, wherever necessary.**

Question No.		Max. Marks
Q1 (a)	Write a short note on 1) Alpha decay 2) Beta decay OR Explain the construction and working of medical cyclotron and various radionuclide produced by cyclotron	[05] [05]
Q1 (b)	Draw and explain Radionuclide Generators in medical purpose to generate the radionuclide	[10]
Q2 (a)	i) Write short notes on Ideal Radiopharmaceutical ii.) How to control radiation exposure? OR i.) What is Methods of Radiolabelling ii.) Write a short note on Radioactive Waste Management	[06] [04] [05] [05]
Q2 (b)	Define RIA. Explain its clinical applications.	[05]
Q3 (a)	Write a short note on solid state radionuclide detector	[05]
Q3 (b)	Explain the double isotope method OR	[10] [10]

	Plot the graph of Pulse Height versus Voltage graph in Gas field detector and Explain the five regions in details.	
Q4 (a)	Draw and explain the block diagram of a typical Gamma Camera OR i.) Explain the biological effects of radiation ii.) Compare the Gama Camera with Rectilinear Scanner	[10] [05] [05]
Q4 (b)	What is (Dynamic) Fast turn over tracer? Explain with suitable example.	[05]
Q5 (a)	Solve any one. i) Discuss the clinical application of SPECT ii) What are the various types of detectors used in Nuclear Medicine? iii) What are the different steps in RIA?	[05] [05] [05]
Q5 (b)	Draw and Explain the block diagram of typical SPECT system	[10]

